

**Remarks/Arguments:**

Claims 6-13, previously presented, are pending.

Claims 1-5 are canceled, without prejudice or disclaimer.

Claims 6 and 7 were rejected under 35 USC 102(e) for allegedly being anticipated by US6200550 (Masterson). Reconsideration is requested.

For anticipation under § 102 to exist, each and every claim limitation, as arranged in the claim, must be found in a single prior art reference. *Jamesbury Corp. v. Litton Industrial Products, Inc.*, 225 USPQ 253 (Fed. Cir. 1985). The "absence" from a prior art reference of a single claim limitation "negates anticipation." *Kolster Speedsteel A B v. Crucible Inc.*, 230 USPQ 81, 84 (Fed. Cir. 1986). A reference that discloses "substantially the same invention" is not an anticipation. *Jamesbury Corp.* To anticipate the claim, each claim limitation must "*identically* appear" in the reference disclosure. *Gechter v. Davidson*, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997) (*emphasis added*).

The rejected claims are limited to (1) a "spray," which contains (2) "ubiquinone Q-10" in (3) an "aqueous colloidal dispersion." Masterson fails to meet limitation (3)—the "aqueous colloidal dispersion"—as pointed out in the amendment filed June 24, 2006 (the "previous amendment"). The "absence" from Masterson of this limitation "negates anticipation" by the reference. *Kolster Speedsteel A B*, 230 USPQ at 84. Accordingly, withdrawal of the §102(e) rejection is in order.

Applicant has considered the rebuttal argument set forth in the statement of rejection (final Action, page 2), i.e.:

Applicant asserts Masterson does not disclose "aqueous colloidal dispersion." The relevance of this assertion is unclear. Clearly Masterson discloses that Coenzyme Q<sub>10</sub> is combined with a solubilizing agent and water-soluble flavoring agents, the solubilizing agent, must be capable of preventing Coenzyme Q<sub>10</sub> from precipitating from the water based composition and forming a heterogenous unstable composition.

First of all, the rebuttal argument incorrectly alleges that the "aqueous colloidal dispersion" limitation is inherently met by Masterson's "solubilized Coenzyme Q<sub>10</sub>." The allegation is incorrect because—as pointed out in the previous amendment—the reference disclosure fails to satisfy the standards for establishing lack of patentability based on teachings inherently disclosed in a reference.

For the doctrine of inherency to apply it must be "*inevitable*" from the teachings of the prior art. *In re Wilding*, 190 USPQ 59, 62 (CCPA 1976) (*emphasis added*). "In relying on a theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (*emphasis in original*). Before "the burden shifts," the examiner has "the initial burden of establishing a prima facie basis for the alleged inherency." 17 USPQ2d at 1463-64. To base a rejection on what is allegedly inherent in the reference teachings,

the examiner must . . . reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the applied prior art.

17 USPQ2d at 1464 (*emphasis in original*).

Masterson's disclosure of a mouth spray does not inherently meet the limitation "aqueous colloidal dispersion" on the rejected claims. Since the reference simply does not require that the mouth spray be in the form of "an aqueous colloidal dispersion," the limitation is not an inevitable

characteristic of the disclosed mouth spray. *Wilding*, 190 USPQ at 62. Since this limitation—both expressly and inherently—is absent from Masterson, anticipation by Masterson is negated, *Kolster Speedsteel A.B. supra*, and withdrawal of the rejection under §102(e) based on Masterson appears to be in order.

Secondly, the rebuttal argument results from a misinterpretation of Masterson. Even though the reference was misinterpreted, the §102(e) rejection is fatally flawed for mistakenly relying on the doctrine of inherency, as explained above. Nevertheless, in order to advance prosecution, applicant provides the following explanation of how Masterson's "solubilized Coenzyme Q<sub>10</sub>"—correctly interpreted—fails to meet the limitation "an aqueous colloidal dispersion" on the rejected claims.

Attached hereto is *Singapore Science Centre: ScienceNet-Physical Sciences-Physical/Theoretical Chemistry*, Question No. 6337: "What are the definitions and examples of a solution, a suspension and a colloid"?<sup>1</sup> As its title indicates, the reference defines and exemplifies the three, different mixtures—of solids, liquid, and gasses—known in the art of physical chemistry as a "solution," a "suspension," and a "colloidal system," i.e. (emphasis added):

A solution is a single, homogeneous liquid, solid, or gas phase that is a mixture in which the components (liquid, gas, solid, or combination thereof) are uniformly distributed throughout the mixture. For example, a solution is formed when sugar is dissolved in water. The resulting sugar solution is a single homogeneous liquid phase.

A suspension is a mixture of fine, non-settling particles of any solid within a liquid or gas, the particles being the dispersed phase, while the suspending medium is the

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<sup>1</sup>URL <http://www.science.edu.sg/ssc/detailed.jsp?artid=2497&type=6&root=5&parent=5&cat=60> (attached).

continuous phase. An example is milk of magnesia, which is a suspension of magnesium hydroxide in water. A suspension is not a single homogeneous phase. After a period of time, the small solid particles may settle out as sediment on standing, due to the effect of gravity.

A colloidal system is an intimate mixture of two substances, one of which, called the dispersed phase (or colloid), is uniformly distributed in a finely divided state through the second substance, called the dispersion medium (or dispersing medium). Colloidal particles are usually between 1 to 100 nanometres in diameter. If a substance such as albumin, the protein of egg white, is mixed with water it does not dissolve but form a colloidal dispersion. This dispersion is not a solution and is not homogeneous, since the molecules of protein do not dissolve. The molecules are dispersed throughout producing a heterogeneous or two-phase system. Since colloidal particles are very small, they do not settle on standing. Colloid particles are therefore intermediate in size between the small particles of a true solution and the larger, visible particles of a suspension.

Accordingly, a solution differs from a colloidal dispersion with respect to composition, molecular interaction, and physical system, i.e.:

	solution	colloidal dispersion
composition	<i>homogeneous</i>	<i>heterogeneous</i>
molecular interaction	<i>molecules dissolved</i>	<i>molecules dispersed</i>
physical system (state of matter)	<i>single phase</i>	<i>two phase</i>

Commonly known examples illustrate the difference between a solution and a dispersion. Fine sand can form a dispersion (a two-phase (solid/liquid) system) in water; but, it cannot form a solution (a single-phase (liquid) system) in water. On the other hand, table sugar readily forms a solution (a single-phase (liquid) system) in hot coffee; whereas, it cannot form a dispersion (a two-phase (solid/liquid) system).

Some substances that are normally insoluble in water can, nonetheless, be dissolved in water with the aid of a solubilizer. An example would be oil and water; which, while ordinarily immiscible, form a solution with the aid of a detergent.

Masterson discloses oral care compositions, such as a "spray," prepared from a Coenzyme Q<sub>10</sub>-containing solution, i.e, "solubilized Coenzyme Q<sub>10</sub>." Masterson (Abstract, column 8, lines 33-37, and column 8, line 65 – column 9, line 4) teaches (emphasis added):

In formulating the oral care compositions of the present invention, the Coenzyme Q<sub>10</sub> is solubilized in a non-toxic solubilizing agent which is compatible with use in the oral cavity. . . .

When the oral composition is in the form of an oral spray, the vehicle can be a hydroalcohol solution and the composition can also contain flavorings, peptizing agents, sweeteners, moistening agents or cooling agents, and the like. . . .

Methods for preparing oral care compositions of the present invention comprise solubilizing Coenzyme Q<sub>10</sub> separately prior to adding to other ingredients of the formulation. It is typical that the solubilized Coenzyme Q<sub>10</sub> is then admixed with one or a mixture of any humectant used in the formulation. The remaining ingredients can be admixed prior to adding to the component containing Coenzyme Q<sub>10</sub>.

Solubilized means, as exemplified in solubilize: Definition and Much More<sup>2</sup>:

To make (a substance such as a fat or lipid) soluble or more soluble, especially in water, by the action of a detergent or other agent.

Thus, Masterson's "solubilized Coenzyme Q<sub>10</sub>" is a solution.

As opposed to a spray solution—as disclosed in Masterson—the presently claimed "spray" contains "ubiquinone Q-10 in an aqueous colloidal dispersion" (emphasis added). Masterson's "solubilized Coenzyme Q<sub>10</sub>" containing oral care composition—whether in spray form or otherwise

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<sup>2</sup>Answers.com™ Online at <http://www.answers.com/topic/solubilize> (attached).

—is a single-phase, homogeneous system, in which molecules of Coenzyme Q<sub>10</sub> are dissolved. On the other hand, the presently claimed "spray" composition is a two-phase, heterogeneous system, in which molecules of ubiquinone Q-10 are dispersed—not "solubilized." Simply put, a "solution" is not a "colloidal dispersion," as readily appreciated by one of ordinary skill in the art.

Moreover, a dispersion is readily differentiated from a solution by what is known as the Tyndall effect. As explained in "Colloids, The Tyndall Effect and More"<sup>3</sup>:

The Tyndall effect is usually given as a definitive test to distinguish between a true solution and a colloid. The Tyndall effect involves the scattering of a beam of light as the light passes through a medium having particles of colloidal size. Since particles such as molecules of sugar or sodium ions or chloride ions in solution are too small to scatter light, a beam of light passing through such a solution is not scattered. However, the protein molecules in milk are of colloidal size and consequently a drop of milk mixed into water will cause a light beam traversing the solution to be scattered.

Since Masterson's "solubilized Coenzyme Q<sub>10</sub>" containing composition—"spray . . . solution" or otherwise—is in no way a colloidal dispersion, Masterson fails to meet the "aqueous colloidal dispersion" limitation on the rejected claims. A limitation on the rejected claims being absent from Masterson, anticipation by the reference is negated. *Kolster Speedsteel A B, supra*. The present claims cannot be anticipated by Masterson, because each and every claim limitation does not "identically appear" in the reference. *Gechter*, 43 USPQ2d at 1032. Withdrawal of the rejection under §102(e) appears to be in order.

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<sup>3</sup>demo2, Online at <http://intro.chem.okstate.edu/ChemSource/Solutions/demo2.html> (attached).

or in combination, teaches or suggests the limitation on treatment use to the diseases recited in the rejected claims. Since "the cited references do not support each limitation" of rejected claims 8-10, rendering the rejection "inadequate on its face." *Thrift*, 63 USPQ2d at 2008. Withdrawal of the rejection of claims 8-10 under § 103(a) based on the combined teachings of Masterson and Nagley further appears to be in order.

Claims 6-11 and 13 were rejected under 35 USC 103(a) as allegedly obvious based on Masterson in view Nagley and JP52130922 (ISAO). Reconsideration is requested.

ISAO discloses the use of Coenzyme Q<sub>10</sub> for the treatment of headaches. ISAO fails to teach or suggest the limitation "an aqueous colloidal dispersion." Since ISAO, therefore, does not cure the fatal deficiency of Masterson combined with Nagley—in meeting each and every limitation of the rejected claims—"the cited references do not support each limitation" of the rejected claims, rendering the rejection "inadequate on its face." *Thrift*, 63 USPQ2d at 2008. Withdrawal of the rejection under § 103(a) based on the combined teachings of Masterson, Nagley, and ISAO appears to be in order.

Moreover, rejected claims 8-10 and 13 provide a method of using the presently claimed spray to treat diseases related to a neural disorders such as pain, migraine, neuropathy, depression, psychoses, lack of concentration, Alzheimer's, Parkinson's and the like. Neither Masterson nor Nagley nor ISAO, taken alone or in combination, teaches or suggests the limitation on treatment use to the diseases recited in the rejected claims. Since "the cited references do not support each limitation" of rejected claims 8-10 and 13 , rendering the rejection "inadequate on its face." *Thrift*,

Claims 6-11 were rejected under 35 USC 103(a) as allegedly obvious based on Masterson in view US5981601 (Nagley). Reconsideration is requested.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art," *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), "and it is error to ignore specific limitations distinguishing over the [prior art] reference." *Ex parte Murphy*, 217 USPQ 479, 481 (PO Bd. App. 1982). A "ground of rejection is simply inadequate on its face . . . [when] the cited references do not support each limitation of [the] claim." *In re Thrift*, 63 USPQ2d 2002, 2008 (Fed. Cir. 2002).

As explained in the remarks of previous amendment (incorporated herein by reference), Nagley fails to teach or suggest the limitation "an aqueous colloidal dispersion." Since Nagley, therefore, does not cure the fatal deficiency of Masterson—in meeting each and every limitation of the rejected claims—"the cited references do not support each limitation" of the rejected claims, rendering the rejection "inadequate on its face." *Thrift*, 63 USPQ2d at 2008. Withdrawal of the rejection under § 103(a) based on the combined teachings of Masterson and Nagley appears to be in order.

Moreover, rejected claims 8-10 provide a method of using the presently claimed spray to treat diseases related to a neural disorders such as pain, migraine, neuropathy, depression, psychoses, lack of concentration, Alzheimer's, Parkinson's and the like. Neither Masterson nor Nagley, taken alone



63 USPQ2d at 2008. Withdrawal of the rejection of claims 8-10 and 13 under §103(a) based on the combined teachings of Masterson, Nagley, and ISAO further appears to be in order.

Claims 6-12 were rejected under 35 USC 103(a) as allegedly obvious based on Masterson in view Nagley and *Molec. Aspects Med.*, 18 (Supplement), s.169-s179, 1997 (Beal). Reconsideration is requested.

Beal discloses experiments involving the administration of Coenzyme Q<sub>10</sub>-containing tablets to rats. Beal fails to teach or suggest the limitation "an aqueous colloidal dispersion." Since Beal, therefore, does not cure the fatal deficiency of Masterson combined with Nagley—in meeting each and every limitation of the rejected claims—"the cited references do not support each limitation" of the rejected claims, rendering the rejection "inadequate on its face." *Thrift*, 63 USPQ2d at 2008. Withdrawal of the rejection under §103(a) based on the combined teachings of Masterson, Nagley, and Beal appears to be in order.

Moreover, rejected claims 8-10 provide a method of using the presently claimed spray to treat diseases related to a neural disorders such as pain, migraine, neuropathy, depression, psychoses, lack of concentration, Alzheimer's, Parkinson's and the like. Neither Masterson nor Nagley nor Beal, taken alone or in combination, teaches or suggests the limitation on treatment use to the diseases recited in the rejected claims. Since "the cited references do not support each limitation" of rejected claims 8-10 and 13, rendering the rejection "inadequate on its face." *Thrift*, 63 USPQ2d at 2008. Withdrawal of the rejection of claims 8-10 and 13 under §103(a) based on the combined teachings of Masterson, Nagley, and Beal further appears to be in order.

***Repeated Request for Acknowledgment of  
Foreign Priority Under 35 USC 119***

A claim to foreign priority under 35 USC 119 has been made (inventorship declaration of record) and receipt of the certified copy of the priority document acknowledged in parent application no. 09/890,277 (Office Action mailed August 14, 2002).

Request was made—in the response filed June 24, 2006—that the Examiner mark the next Office Action to acknowledge, both, the claim to § 119 priority and receipt of the certified copy. The instant Office Action was not so marked.

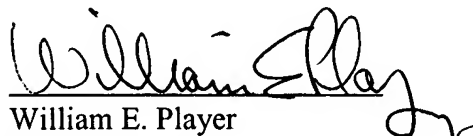
Accordingly, repeated request is made that the Examiner mark the next Office Action to acknowledge, both, the claim to § 119 priority and receipt of the certified copy.

Favorable action is requested.

Respectfully submitted,

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## solubilize

### Dictionary



sol·u·bi·lize (sŏl'yə-bə-līz')

tr.v., -lized, -liz·ing, -liz·es.

To make (a substance such as a fat or lipid) soluble or more soluble, especially in water, by the action of a detergent or other agent.

### Medical



sol·u·bi·lize (sŏl'yə-bə-līz')

v., -lized, -liz·ing, -liz·es.

To make substances such as fats soluble in water by the action of a detergent or similar agent.

### Mentioned In

solubilize is mentioned in these AnswerPages:

[Siderophores](#)

[apolipoprotein](#)

[Penicillium bilaiae](#)

[DNA extraction](#)

[Triton X-100](#)

[Krafft temperature](#)

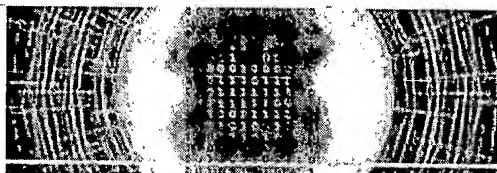
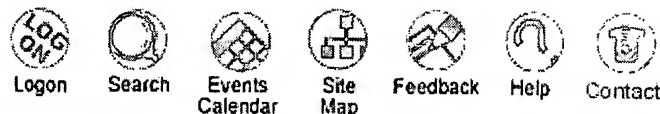
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## ScienceNet - Physical Sciences - Physical/ Theoretical Chemistry

### Question No. 6337 :

**What are the definitions and examples of a solution, a suspension and a colloid?**

A solution is a single, homogeneous liquid, solid, or gas phase that is a mixture in which the components (liquid, gas, solid, or combination thereof) are uniformly distributed throughout the mixture. For example, a solution is formed when sugar is dissolved in water. The resulting sugar solution is a single homogeneous liquid phase.

A suspension is a mixture of fine, non-settling particles of any solid within a liquid or gas, the particles being the dispersed phase, while the suspending medium is the continuous phase. An example is milk of magnesia, which is a suspension of magnesium hydroxide in water. A suspension is not a single homogeneous phase. After a period of time, the small solid particles may settle out as sediment on standing, due to the effect of gravity.

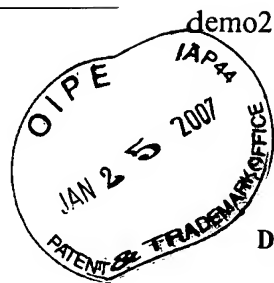
A colloidal system is an intimate mixture of two substances, one of which, called the dispersed phase (or colloid), is uniformly distributed in a finely divided state through the second substance, called the dispersion medium (or dispersing medium). Colloidal particles are usually between 1 to 100 nanometres in diameter. If a substance such as albumin, the protein of egg white, is mixed with water it does not dissolve but form a colloidal dispersion. This dispersion is not a solution and is not homogeneous, since the molecules of protein do not dissolve. The molecules are dispersed throughout producing a heterogeneous or two-phase system. Since colloidal particles are very small, they do not settle on standing. Colloid particles are therefore intermediate in size between the small particles of a true solution and the larger, visible particles of a suspension.

### Question Asked By:

Name: Eva

Age Group: 13 to 20

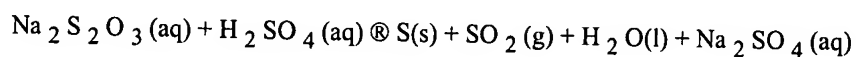




## Demonstration 2: Colloids, The Tyndall Effect and More

### Introduction

The Tyndall effect is usually given as a definitive test to distinguish between a true solution and a colloid. The Tyndall effect involves the scattering of a beam of light as the light passes through a medium having particles of colloidal size. Since particles such as molecules of sugar or sodium ions or chloride ions in solution are too small to scatter light, a beam of light passing through such a solution is not scattered. However, the protein molecules in milk are of colloidal size and consequently a drop of milk mixed into water will cause a light beam traversing the solution to be scattered. To demonstrate the difference, the two systems described above are usually employed. The milk in water changes color as more milk is added (bluish to yellow to red). However, a single system where the particles go from "solution size" to "colloidal size" provides a more dramatic demonstration and as the particles continue to grow additional optical effects may be demonstrated. One such system is the production of sulfur by the reaction between sodium thiosulfate and sulfuric acid.



Here, the particles of sulfur grow from solution size to colloidal size and finally begin to precipitate. As this phenomenon occurs, it is possible to demonstrate the Tyndall effect and to examine some of the characteristics of the scattered and transmitted light. These characteristics may then be related to other phenomena, such as red sunsets.

### Safety

Some students are very allergic to sulfur dioxide ( $\text{SO}_2$ ), which is generated during this demonstration. You should offer a warning and excuse students if they have a known sensitivity to sulfur dioxide (or to sulfites in food, which may signal such a sensitivity).

### Option A

#### Materials

Square or rectangular battery jar or a small fish tank

Stirring rod (long glass rod to stir contents of the battery jar)

Parallel beam light source or a flashlight

Piece of frosted glass or a sheet of white paper stapled to a frame

Ring stand and clamp to hold the glass or paper in a vertical position

Prewieghed sample of  $\text{Na}_2\text{S}_2\text{O}_2$  or  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$  to make a 0.01 m solution when dissolved in the water in the battery jar (1.6 g  $\text{Na}_2\text{S}_2\text{O}_3$  per L water or 2.5 g  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$  per L water) 10 mL Concentrated sulfuric acid,  $\text{H}_2\text{SO}_4$  per L of water in the battery jar

**Optional:**

One or more pieces (sheets) Polaroid material

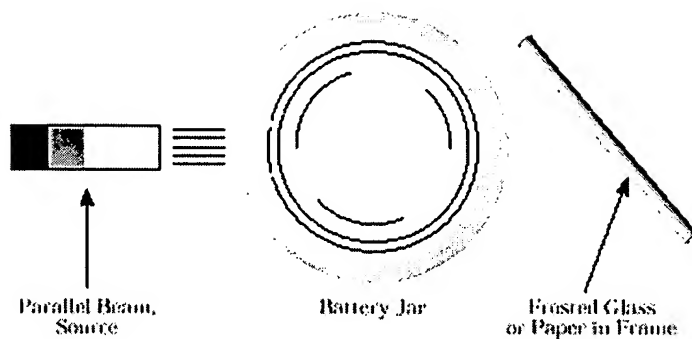
Cardboard silhouette of a flying duck (about the size of half the diameter of the parallel beam) and hung like a mobile from a fine piece of string  
Recording of "Canadian Sunset" and appropriate player.

**Directions**

The demonstration should be conducted in a well ventilated area because of the production of  $\text{SO}_2$  (g) whose odor can be mildly detected while the demonstration is in progress.

Set up the light source, battery jar, and frosted glass as illustrated in Figure 2. The battery jar should be filled with sufficient depth of water so that the entire diameter of the light beam passes through the liquid. (The amount of water should be predetermined in order to have a preweighed sample of sodium thiosulfate and a premeasured volume of concentrated sulfuric acid prepared.) Also, the water should be placed into the battery jar a few minutes prior to beginning the demonstration to permit air bubbles to escape.

Turn on the light source and darken the room. If you will be using the Polaroid sheets, pass these out to students seated directly in front of the demonstration. Ask students whether they can see the beam traversing the water. If using the Polaroid sheets, ask whether rotating them has any effect. [They should not be able to see the beam but the white round disk of the transmitted beam hitting the frosted glass should be visible. Nothing different should be seen using the Polaroid sheet.] Point out that the transmitted beam striking the frosted glass is colorless (white). Add the preweighed sample of sodium thiosulfate to the water and stir until it is dissolved. Wait for any bubbles to leave the solution. Repeat the above question(s). [The reply should be the same.] Carefully and with stirring, add the premeasured concentrated sulfuric acid to the sodium thiosulfate solution. Wait about 15 seconds for bubbles to clear and repeat the above question(s). [The reply should be the same.] Ask if there is any evidence of a chemical reaction? [There should be no such evidence.] Ask students to tell you when they notice any change. [Using the concentrations recommended and a solution temperature of about 20 °C, it should take about two minutes for the Tyndall beam to start to appear and another two minutes for the particles to become large enough and concentrated enough for the percent of transmitted light to go to zero. The reaction rate appears to be first order in thiosulfate concentration so if you want to slow things down, decrease the concentration of sodium thiosulfate.] As soon as the Tyndall beam becomes visible ask students to compare the color of the scattered light to that of the transmitted light striking the screen. Also ask students using the Polaroid sheets whether rotating them has any effect on the intensity of the scattered light. [The scattered beam is bluish, whereas the transmitted light starts to turn yellow. As the Tyndall beam becomes more visible the scattered beam loses a little of its bluish color as the green and yellow portion of the spectrum is scattered and the transmitted light striking the screen goes from yellow to red. This observation occurs because the wavelengths of the light scattered are directly proportional to the size of the particle scattering the light. Also, the scattered light is polarized.] If you have the silhouette of a "flying duck" you can add a dramatic closing touch to the demonstration. Start the recording of "Canadian Sunset" and hang the silhouette over the frosted glass so that it intercepts the disk of the reddening transmitted beam before the beam strikes the glass.

**TOP VIEW**

*Figure 2. Apparatus for Tyndall Effect demonstration.*

Dispose of the battery jar solution as soon as the demonstration is ended to minimize the amount of  $\text{SO}_2$  entering the atmosphere. After summarizing or students that the Tyndall beam was not noted until the particle size had become that of a colloid and that no beam had been visible when there was a true solution, you might want to extend the discussion and demonstration to other areas. If the day happens to be sunny with a relatively clear sky you might ask students to use the Polaroid sheets to observe the light coming from the blue sky at right angles to the direction of the sun. (CAUTION: Make sure students do not look toward the sun since this is very dangerous.) [The scattered blue light is polarized.]

**Questions**

You may follow the demonstration with the following questions:

1. Why does the sun appear exceptionally red when it sets behind a city? [The blue end of the visible spectrum is scattered by the dust and aerosols in the air over the city and the red end of the spectrum is transmitted.]
2. Why are fog lights usually yellow and not white? [The yellow light being of relatively long wavelength is transmitted through the colloidal size fog particles thereby permitting the driver to see, whereas the blue component of white light is scattered back to the driver thereby obscuring vision.]
3. Why not use red fog lights? [Red light is usually a signal of danger and approaching motorists may interpret it as such. Also, the human eye is much more sensitive to yellow light than red light.]
4. Why do things look clearer through rose (pink) colored glasses? [The pink glass filters out blue light that is scattered by aerosols in the environment. Since this blue light does not reach our eyes, the clarity of objects is increased.]

**Option B****Materials**

Overhead projector

Medicine dropper

Beaker of water

Milk, 10 mL

**Directions**

A simpler and quicker demonstration involves a beaker of water on the stage of an overhead projector and a small amount of milk in a medicine dropper.

As the milk is slowly added to the water, the color of the water becomes bluish, while the circle of light thrown up onto the screen gradually becomes yellow then orange and then red. The questions suggested above (Option A) are also appropriate for this option.

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